

REDESCRIPTION AND INTENSITY OF TREMATODE PARASITES (FAMILY: DICROCOELIIDAE) IN COMMON MYNA *ACRIDOTHERES TRISTIS* (PASSERIFORMES: STURNIDAE) OF DISTRICT LARKANA, SINDH, PAKISTAN

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خلاصہ

موجودہ مطالعات کے دوران پرندوں کے پتھاشی سے ٹریکیمیٹوڈ پر جیویوں کے معائنے کے لیے ضلع لارکانہ، سندھ، پاکستان سے عام مانا (*Acridotheres tristis*) کے 240 نمونے جمع کیے گئے۔ 240 میں سے صرف چھ پرندے ٹریکیمیٹوڈ پر جیویوں کی میزبانی کرتے ہوئے دیکھے گئے، تمام کا تعلق *Conspicuum* کی نسل سے تھا۔ میزبان پرندوں سے جمع کیے گئے پر جیویوں میں *C. murtazi*، *C. quratulainae* اور *C. aliraaazi* شامل ہیں۔ ان کی مناسب شناخت کے لیے تمام ٹریکیمیٹوڈس کی مورفولوجی کی جانچ کی گئی۔ یہ پایا گیا کہ سی مرتضیٰ کی سب سے زیادہ شدت سی قرت العین کے بعد تھی، جب کہ سب سے کم شدت سی علیر ازی نے ظاہر کی تھی۔

Abstract

During the present studies, a total of 240 Common myna (*Acridotheres tristis*) were collected from District Larkana, Sindh, Pakistan and examined for the presence of the trematode parasites. Out of 240, only six host birds were found positive hosting the trematode parasites in their gallbladder. All trematodes collected belonging to the genus *Conspicuum* were identified as *C. murtazi*, *C. quratulainae* and *C. aliraaazi*. It was found that the highest intensity of *C. murtazi* was demonstrated by the *C. quratulainae*, whereas lowest intensity was exhibited by *C. aliraaazi*.

Keywords: Avian trematodes, intensity, *Acridotherestrictis*, District Larkana, Sindh, Pakistan

Introduction

Trematodes belongs to Phylum Platyhelminthes that embraces those flukes that are internal parasites. Class trematoda consists of 24,000 species. (Trematoda *et al.*, 1978), having one or more external suckers and complex life cycle with at least two hosts. Their habitat changes frequently during their lifetime. They are obligate parasites, which means they need host's food. Adult trematodes attach to the host via suckers. They pose a significant threat to human health. They are responsible for infecting livestock, sport, and commercial fish and game with negative economic impacts on agriculture, sport, and commercial fishing (Albon *et al.*, 2002 and Stien *et al.*, 2002). Their habitat changes frequently during their lifetime. Adult trematodes attach to the host via pupae. Parasites affect dynamics of wild animal populations as they have negative impact on individual performance as their health gets deteriorated (De Castro *et al.*, 2005, Soomro *et al.*, 2016) Parasitic infection affects bird's physical conditions, body weight and reproductive rate (Grimke 2017, Soomro *et al.*, 2016) Parasite infection can worsen the effects of ecological factors on individual fitness (Gulland 1992, Soomro *et al.*, 2017) and in this way, population size of host birds lead to high risk of stochastic events (Garcia *et al.*, 1979 and Lafferty *et al.*, 2002).

The widespread population of Common myna was of particular interest because of its abundant distribution with no previous record of parasite intensity (McCallum *et al.*, 2002 and (Poulin *et al.*, 2016). Population of Common myna is highly abundant in Pakistan. However, survival rate and potential role of trematodes on them is unknown. In this context, present study was carried out to establish status of helminth parasites with aims of assessing their occurrence and intensity in different species of trematodes. Parasite richness was also focused.

Materials and Methods

During course of study, 240 host birds of the Starling family (*Acridotheres tristis*) were captured from various locations in Larkana District, Sindh, Pakistan (Figure 1). They underwent dissection using technical methods (Garcia and Ash 1979) to collect and identify trematodes species as well as their intensity. The trematodes were dehydrated in graded series of ethanol, stained in borax carmine, Cleared in clove oil and xylo. Finally mounted on the permanent glass slide with the help of Canada balsam.

Results and Discussion

Species of genus *Conspicuum* Balerao, 1936 (Denton 1951) reported from Pakistan include only one *C. alykhani* (Sanjota N. Das and Raffia Rehana Ghazi, 2014) and majority species of genus (*Conspicuum* Bhalerao, 1936) reported from various countries including *C. icteridorum* Denton and (Bryad *et al.*, 1951), *C. macrorchis* (Denton 1951) and (Bryad *et al.*, 1951), (Kasimov *et al.*, 1952) *C. orientale* Faust *et al.*, 1966, Faust (1966) *C. popvi* Odening, 1964, *C. acuminatum* (Nicoll, 1955) (Travassos, 1944) *C. kalmikese* (Skarjabin *et al.* Issaaitchikoff, 1927) *C. conspicuum* (Gomes De Faria, 1912 Bhalerao, 1936), *C. alectoris* (Travassos, 1944) *C. rarum* (Shtrom, 1940) (Odening, 1964) *C. durenii* (Vercammen Grandjean, 1960) (Odening, 1964) *C. morenoi* (Odening, 1964) *C. biliosum* (Shtrom, 1940 and Odening, 1964) *C. latum* (Shtrom, 1940 and Odening, 1964) *C. pulchrum* (Travassos, 1920 and Travassos, 1944)

Diverse species of trematodes parasites have previously been studied from Sindh province (Trematoda *et al.*, 1978, Albon *et al.*, 2002, Stien *et al.*, 2002 and Grimke 2017). The morphology, occurrence and intensity of *Conspicuum murtazi*, *Conspicuum quratulainae* and *Conspicuum aliraazi* from *Acridotheres tristis* (host) for the first time by present study (Figure 2-4).

Description of *Conspicuum murtazi*

Body of present species was recorded as large, elongated thick, highly, muscular, rounded anteriorly and tapering posteriorly measuring 0.055-0.044 mm long by 0.094- 0.078 mm wide. Fore body smaller measuring 0.020-0.011 mm long while hind body is 0.529- 0.31 mm long. Oral sucker sub terminal, highly muscular, rounded in shape measuring 0.052-0.238 in diameter. Pharynx kidney shaped, overlapped by oral sucker measuring 0.020-0.013 mm long. Esophagus tubular narrow to broad measuring 0.05-0.194 mm long diverticulating into intestinal ceca at the region between oral sucker and ventral sucker. Ceca run in lateral fields of body not reaching up to the posterior extremity. Ventral sucker broader than elongated with slight constriction on lower level located in between the two testes, measuring 0.055-0.104 mm long by 0.094-0.164 mm wide. Both testes are bean- shaped located at lateral sides of the ventral sucker. Right testis measuring 0.026-0.024 mm long by 0.061-0.208 mm wide and left testis measuring (0.032-0.031) mm long by 0.058-0.040 mm wide. Ovary bean- shaped sub median located behind the ventral sucker and right testes, measuring 0.05-0.03 mm long by 0.0794-0.059 8 mm wide. Vitellaria running in lateral fields of body and overlap ceca, commencing from the level of testes reaching far behind the ovary, not reaching posterior extremity. Uterus filling entire body of the species. Eggs measuring 0.017-0.064 mm long. Genital pore is located at the level of esophagus

Description of *Conspicuum aliraazi*

Body of the worm is elongated, thick, and highly muscular, anteriorly rounded while posteriorly tapers and measures 2.72-2.70×1.27-1.25 mm; oral sucker terminal, rounded in shape and measures 0.18-0.16×0.18-0.17 mm; ventral sucker slightly oval to elliptical in shape, overlapping uterus, situated towards lateral field of right side and measures 0.07- 0.05×0.14-0.12 mm; fore body measures 0.39-0.37 mm; testes rounded to oval in shape overlapping uterus and both separate from each other by uterus; right testis measures 0.16- 0.14×0.18-0.15 mm whereas left testis measures 0.14- 0.12×0.16-0.13 mm; the distance between right and left testes measures 0.54-

0.52 mm; post-testicular space measures 2.50-2.48 mm; ceca invisible; ovary slightly oval to rounded in shape, located behind the uterus and measures 0.10- 0.08×0.16-0.14 mm; vitelline follicles emerge at the level of ventralsucker; uterus found in jumble form filling entire body of the worm right from oral sucker up to the posterior extremity.

Description of *Conspicuum quratulainae*

Body of worm is elongated, thick and highly muscular; anteriorly rounded contain dimple on left side of oral sucker, posteriorly also rounded but reflects wrinkle type appearance measuring 3.58-3.45×1.70-1.50 mm; oral sucker bean shaped and sub-terminal measuring 0.38-0.35×0.43- 0.42 mm; pharynx long slightly bean shaped completely separated from the oral sucker measuring 0.18×0.15 mm; esophagus not visible; ventral sucker is smaller than oral sucker but globular shaped measuring 0.19-0.18×0.43-0.41 mm in diameter; both testes are asymmetrical overlapped with uterus, left testis smaller than right testis and oval in shape measuring 0.14-0.13 ×0.18-0.15 mm; right testis larger than the left testis oval to round in shape measuring 0.27-0.26× 0.19-0.17 mm above the right testis the worm contains dimple at the margin; ovary oval in shape and located behind the left testis measuring 0.18-0.16×0.27-0.26 mm; vitelline follicles commencing at the level of testicular zone; ceca not observed due to jumbling of uterus; small spaces manifesting empty area, whereas rest of the body is filled with uterus; eggs are operculated and brownish in colors measuring 0.08-0.07 correspondingly.

Table. 1. Showing intensity of trematodes parasites *C. murtazi*, *C. quratulainae* and *C. aliraazi* recovered from *Acridotheres tristis*.

Helminths	No. of specimens described.	No. of birds collected during course of study.	Intensity of trematodes %
<i>C. murtazi</i>	05	240	41.66%
<i>C. quratulainae</i>	04	240	33.33%
<i>C. aliraazi</i>	03	240	25%
Parasitic habitat	Gall bladder	Gall bladder	-
Host	<i>Acridotheres tristis</i>	<i>Acridotheres tritis</i>	-
Locality	Larkana, Sindh, Pakistan	Larkana, Sindh, Pakistan	-



Fig. 1. Map of Sindh province and collection area of *Acridotheres tristis*.



Fig. 1. Photograph of *C. murtazi* (Scale bar 1.0 mm)



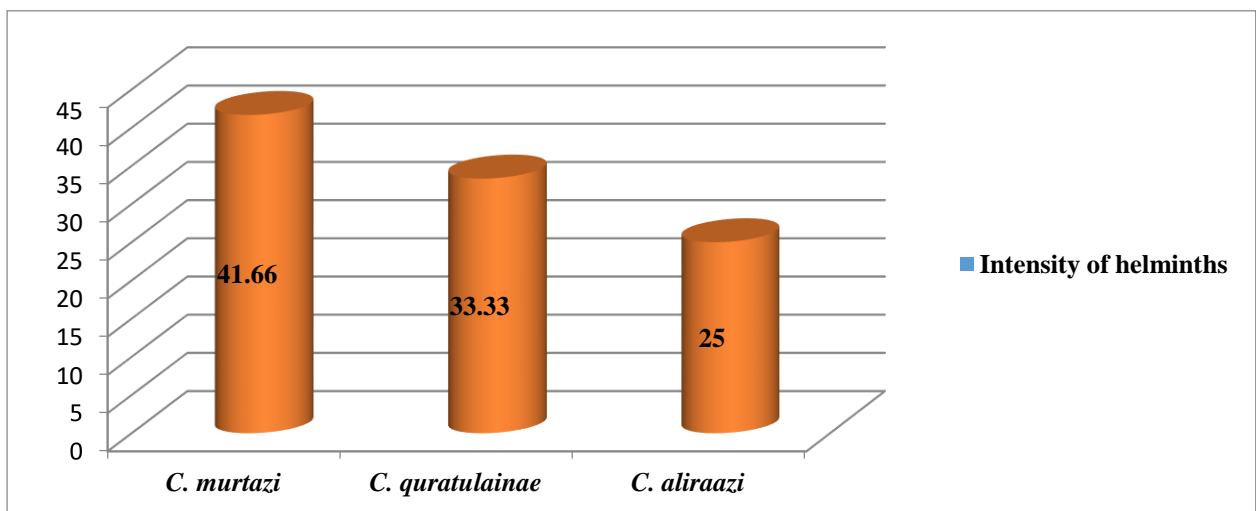
Fig. 2. Photograph of *C. aliraazi* (Scale bar 0.1 mm)



Fig. 3. Photograph of *C. quratulainae* (Scale bar 1 mm)



Fig. 4. Host *Acridotheres tristis* from where collection of trematodes parasites were made (*C. murtazi*, *C.quratulainae* and *C. aliraazi*).



Graphical representation showing the intensity of trematodes parasites (*C. murtazi*, *C. quratulainae* and *C.aliraazi*).

Conclusion

It was recorded that the parasites didn't affect survival of host birds though intensity rate was higher. Very small population of common myna was observed to be affected by helminth parasites trematodes. It was also determined that the even higher intensity will not be a threat, leading to mortality and/or decline of host species.

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